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qu'il a adoptée est à la fois habile et modeste; elle a été, de plus, fort utile aux progrès des études mathématiques en France. Au lieu de compter, comme il en aurait eu le droit, sur l'originalité de son esprit et la rapidité de sa compréhension, il a préféré s'appuyer sur la solidité et la précision de ses connaissances pour tout ce qui touche au domaine algébrique. Dans ce domaine, il a su trouver des sujets de Cours précis et variés, et cela d'autant plus facilement qu'il a continué à travailler exclusivement dans ce demaine et qu'il était constamment au courant de tout ce qui se publiait le concernant. En faisant ce choix, Humbert ne risquait guère de voir son enseignement faire double emploi avec quelque autre; les sujets étudiés par Humbert sont, en effet, presque tous en marge des questions soulevées par les principaux courants de la pensée mathématique pendant les trente dernières années. . . . Puisque ma tâche consiste, aujourd'hui, à parler de la chaire de Mathématiques du Collège de France et de ceux qui l'ont occupée le plus brillamment, j'ai la joie de pouvoir rendre hommage a l'illustre doyen des mathématiciens français, à M. Camille Jordan . . . . Voici toute une série de problèmes dont la liaison avec certains de ceux étudiés par Humbert n'est pas trop lointaine; quelle différence cependant entre les méthodes de ces deux éminents mathématiciens. Humbert utilise partout et toujours la fonction analytique, algébrique même, qu'il réussit ingénieusement à faire intervenir dans bien des questions, même dans des questions arithmétiques; à cet égard, il s'apparente à Poincaré. M. Jordan, suivant la voie ouverte par Galois, traite de questions, relatives par leur énoncé même au calcul algébrique, sans le secours de l'appareil analytique, à l'aide de raisonnements presque synthétiques. Dans ces raisonnements on procède toujours, si l'on veut dire, à une analyse; mais l'instrument qu'on y emploie est sans cesse variable, on le construit, on le modifie à chaque instant, et c'est en ce sens que les raisonnements sont synthétiques. . . . Les excursions faites par M. Jordan hors des domaines de recherches traditionnels avaient d'ailleurs fait réfléchir bien des mathématiciens; ceux-ci ont donné à la jeune école des encouragements précieux qui ont largement compensé les quelques reproches qu'elle a dû subir. Reproches bien injustes d'ailleurs, car, loin de mépriser le calcul, nous sommes persuadés que nos procédés synthétiques actuels céderont quelque jour la place à des procédés meilleurs, parce que plus analytiques; nous ne prétendons qu'à être les précurseurs et les annonciateurs peut-être d'un Viète ou d'un Newton qui introduira un symbolisme nouveau ou des notions nouvelles, peut-être d'un Descartes ou d'un Cauchy qui utilisera un symbolisme déjà connu et qui l'élargira pour des fins nouvelles, et nous soupirons après le nouvel algorithme qui, entre les mains d'hommes habiles comme l'était Humbert, donnera facilement et elégamment plus que ce que nous n'obtenons que péniblement et lourdement."]

UNDERGRADUATE MATHEMATICS CLUBS.

All reports of club activities should be sent to E. L. DODD, Williams College, Williamstown, Mass.

CLUB ACTIVITIES.

THE MATHEMATICS CLUB OF HUNTER COLLEGE, New York City.
[*1918,* 187; *1921,* 387.]

The following meetings were held in 1921–1922:

March 3, 1921: Reception to freshmen.

March 7: Business meeting.

March 21: "Graphical solution of problems" by Isabel Graves '23.

April 4: "Problems from Jones's *Mathematical Wrinkles*" by Monica Gilloran '21.

April 18: "Geometric forms in art and nature" (illustrated with lantern slides) by Professor Lao G. Simons.

May 19: Business meeting.

May 20: Election of officers, as follows: President, Sarah Karnis '22; vice-president, Edna Kramer '22; treasurer, Rose Charlon '22; publicity manager, Henrietta Olidort '23; secretary, Adele Matzke '22.

September 26: "Women mathematicians" by Adele Matzke '22; "Sonya Kovalevski" by Edna Kramer '22.

October 10–November 7: Mathematicians distinguished in other fields: "Omar Khayyam, poet" by Sarah Karnis '22; "Joffre, soldier" by Esther Alfert '24; "Pythagoras, founder of the theory of music" by Mary Goldstein '21; "Leonardo da Vinci, artist" by Eleanor Wohl '22; "Descartes, philosopher" by Rose Charlon '22; "Gerbert, pope" by Isabel Graves '23; "Ben Ezra, rabbi" by Freda Berkowitz '25; "Charles L. Dodgson, author" by Nettie Oken '25; "Carnot, statesman" by Elsie Theurer '21.

November 28: "The mathematics of map-making" by Sarah Malkin '23.
December 12: "Shortcuts in arithmetic explained by algebra" by Minnie Levine '22.
January 9, 1922: "Mathematical games" by Henrietta Olidort '23.
February 27: House warming. Exhibition of hornbooks, reckoning pennies, swam pan, abacus, Jacob's staff, quadrants, geometric square, Babylonian tablets, pictures of mathematicians and old mathematics books.
March 2: Reception to freshmen.
March 13: "The calendar" by Grace Anselm '22.
March 27: "Scales of notation" by Isabel Graves '23.
April 10: "Scales of notation" (continued) by Esther Alfert '24.
May 7: Election of officers, as follows: President, Sarah Malkin '23; vice-president, Isabel Graves '23; secretary, Esther Alfert '24; treasurer, Bessie Schoenfield '24; faculty adviser, Miss Marcia Latham.
May 22: "Alignment charts" by Bessie Schoenfield '24.

(Report by Adele Matzke.)

THE MATHEMATICS CLUB OF THE STATE UNIVERSITY OF IOWA, Iowa City, Ia. [*1920*, 29.]

The officers elected for the year 1921–1922 were: President, Ralph Kennon, Gr.; secretary, Eda Harper, Gr. The following meetings were held:

November 1, 1921: "The value and place of mathematics in modern civilization" by Professor H. L. Rietz.
December 1: "Paradoxes of Zeno" by Ralph Kennon, Gr.
December 15: "Scales of notation" by Howard Hughes '23.
January 12, 1922: "Euclid's parallel postulate" by Orley Brown, Gr.
February 2: "History of logarithms" by George Parks, Gr.
February 16: "The law of the mean" by Elmer Anderman '22.
March 9: "Hyperbolic functions" by Floyd Harper, Gr.
March 23: "Life assurance" by Ross Moyer '23.
April 6: "Solutions of the cubic" by Eda Harper, Gr.
April 20: "Curve tracing" by Harley Chandler, Gr.
May 11: "Comets" by Helen Starbuck '24.

(Report by Floyd Harper.)

THE MATHEMATICS CLUB OF VASSAR COLLEGE, Poughkeepsie, N. Y. [*1918*, 136, 456; *1919*, 264; *1920*, 78, 427.]

The officers elected for 1921–1922 were: President, Theresa McMakin '22; vice-president, Erneste Goodman '23; secretary-treasurer, Dorothy Brown '23 for first term, Harvia Wilson '23 for second term; members of executive committee, Professor Elizabeth B. Cowley, Allegra Hamilton '22.

October 1921: Picnic on "Sunset Hill" with mathematical charades and puzzles.
November 3: Address of welcome by the president. "History of the adding machine" by Helen Taylor '22; "Simple types of adding machines" by Erneste Goodman '23; "Modern adding machines" by Allegra Hamilton '22. Demonstration of certain adding machines.
December 1: "Mathematical education in Czecho-Slovakia" by Maria Podzimkova '22, formerly at the University of Prague.
February 9, 1922: "Chance and luck" by Sarah Eicher '22. The president read a letter from Amy Davison '21, past-president, a student at the Sorbonne, Paris, describing a course on relativity.
April 19: "Historical mathematical puzzle problems" by Allegra Hamilton '22. Professor

Cowley showed photostats of an Italian mathematical manuscript of the Middle Ages, containing three of these problems.

May 18: Indoor picnic. The following officers were elected for 1922-1923: President, Harvia Wilson '23; vice-president, Erneste Goodman '23; secretary-treasurer, Mary Hall '24; members of executive committee, Professor Cowley, Jeannette Kinne '23.

PROBLEMS AND SOLUTIONS.

EDITED BY B. F. FINKEL, OTTO DUNKEL, AND H. P. MANNING.

Send all communications about Problems and Solutions to B. F. FINKEL, Springfield, Mo.

PROBLEMS FOR SOLUTION.

[N. B. Problems containing results believed to be new, or extensions of old results, are especially sought. The editorial work would be greatly facilitated if, on sending in problems, proposers would also enclose any solutions or information that will assist the editors in checking the statements. In general, problems in well-known text-books, or results found in readily accessible sources, will not be proposed as problems for solution in the MONTHLY. In so far as possible, however, the editors will be glad to assist members of the Association with their difficulties in the solution of such problems.]

2986. Proposed by C. F. GUMMER, Queen's University.

A triangle is inscribed in a circle. The arcs into which it divides the circumference are bisected at points forming the vertices of a second triangle. A third triangle is derived in the same way from the second, and so on. Prove that each set of alternate triangles approaches a limiting position.

2987. Proposed by PHILIP FITCH, North Denver High School, Colorado.

A flexible chain of length l and uniform weight is fastened at one end to the ridge of a roof with pitch p and slant height L. If the eaves of the roof are at a height h from the ground and the coefficient of friction between the chain and the roof is μ, how long will it take, after releasing the chain, for the highest end to reach the ground?

2988. Proposed by PHILIP FRANKLIN, Harvard University.

Prove, geometrically, that if in an ellipse the tangent at P cuts the directrices in Z, Z' and the remaining tangents from Z and Z' to the ellipse meet at T, PT is normal to the ellipse at P. (An analytic proof is given in the *Journal of the Indian Mathematical Society*, vol. 13, 1921, p. 234.)

2989. Proposed by L. M. HOSKINS, Stanford University.

How should the following questions be answered, assuming that the place referred to is in latitude 34° 8′?

A building twelve feet high has been erected 49 inches south of our lot line. We desire to erect a wall on our line six inches in thickness. (*a*) How high can we build the wall and have it wholly within the shadow cast by the building? (*b*) How high can we build the wall and have it within the shadow cast by the building during the winter months?

2990. Proposed by R. M. MATHEWS, Wesleyan University.

If a circle be bitangent to a conic, its center is on one of the axes of the curve.

2991. Proposed by E. J. OGLESBY, New York University.

Sum the infinite series,

$$1 + \frac{3x^2}{2!} + \frac{4x^4}{4!} + \frac{6x^6}{6!} + \cdots,$$

where the numerators of the coefficients form a series of numbers whose third differences are all equal to 2.